

INTERNATIONAL COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

United States Patent and Trademark
Office
(Box PCT)
Crystal Plaza 2
Washington, DC 20231
ÉTATS-UNIS D'AMÉRIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 30 June 1999 (30.06.99)	
International application No. PCT/SE98/01861	Applicant's or agent's file reference 49751-53084
International filing date (day/month/year) 16 October 1998 (16.10.98)	Priority date (day/month/year) 24 October 1997 (24.10.97)
Applicant CARLBARK, Olle et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:

21 May 1999 (21.05.99)

☐ in a notice effecting later election filed with the International Bureau on:
2. The election ☒ was
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer Pamella AMALLO-ELOTU Telephone No.: (41-22) 338.83.38
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Einspruch gegen ein europäisches Patent

An das
Europäische Patentamt

21. Okt. 2003

Tabulatoren-Positionen

nur für EPA

I. Angegriffenes Patent

Einspr.-Nr.

OPPO (1)

Patentnummer

EP 1 024 774 B1 ✓

Anmeldenummer

98 949 289.7 ✓

Tag des Hinweises auf Erteilung (Art. 97(4), 99(1) EPÜ)

22.01.2003 ✓

Bezeichnung der Erfindung (Titel):

A waist belt for absorbent garments
Gürtel für absorbierende Kleidungsstücke ✓

II. In der Patentschrift als erster/einziger genannter

Patentinhaber SCA Hygiene Products AG (SE) ✓

Zeichen des Einsprechenden oder Vertreters (maximal 15 Positionen)

17031371 fri/snr

OREF

III. Einsprechender

Name

Paul Hartman AG

Anschrift

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89522 Heidenheim
DE

Zur Kasse
€ 610,- (A)

Staat des Wohnsitzes oder Sitzes

DE

Telefon/Telex/Telefax

Gemeinsamer Einspruch

☐ Miteinsprechende siehe Zusatzblatt

IV. Bevollmächtigung

1. Vertreter

(Nur einen Vertreter angeben,
dem zugestellt werden soll)

1.
FRIZ, Oliver

OPPO (9)

Name

Geschäftsanschrift

Patentanwälte Dreiss, Fuhlendorf,
Steimle & Becker
Postfach 103762
70032 Stuttgart, DE

2. und 3. siehe Beiblatt

Telefon/Telex/Telefax

0711
248938-0

24893899

Weitere zugelassene Vertreter

☐ (siehe Zusatzblatt/Vollmacht)

OPPO (5)

2. Angestellte(r) des Einsprechenden,
die/der für dieses Einspruchs-
verfahren gemäß Art. 133(3) EPÜ
bevollmächtigt werden/wird

Name(n):

Vollmacht(en)

☐ nicht erforderlich

Zu 1./2.

☒ registriert unter Nr.

37210

☐ beigelegt

V. Der Einspruch richtet sich gegen das erteilte Patent

- im gesamten Umfang ☒
- im Umfang der Ansprüche Nr.

VI. Einspruchsgründe:

Der Einspruch wird darauf gestützt, daß

(a) der Gegenstand des europäischen Patents nicht patentfähig ist (Art. 100(a) EPÜ), weil er

- nicht neu ist (Art. 52(1); 54 EPÜ) ☒
- nicht auf einer erfinderischen Tätigkeit beruht (Art. 52(1); 56 EPÜ) ☒

— aus sonstigen Gründen
nämlich

von der Patentierbarkeit ausgeschlossen ist.

(b) das europäische Patent die Erfindung nicht so deutlich offenbart, daß ein Fachmann sie ausführen kann (Art. 100(b) EPÜ, vgl. Art. 83 EPÜ). ☒

(c) der Gegenstand des europäischen Patents über den Inhalt der Anmeldung/der früheren Anmeldung in der ursprünglich eingereichten Fassung hinausgeht (Art. 100(c) EPÜ, vgl. Art. 123(2) EPÜ). ☒

VII. Tatsachenvorbringen und Begründung

(Regel 55(c) EPÜ)

erfolgt auf gesondertem Schriftstück (Anlage 1) ☒

VIII. Sonstige Anträge:

Hilfsweise wird die Anberaumung eines Termins zur Durchführung einer mündlichen Verhandlung beantragt

IX. Beweismittel		nur für EPA
Beigeschlossen = <input checked="" type="checkbox"/> X wird / werden nachgereicht = <input checked="" type="checkbox"/> *		
A. Veröffentlichungen:	Datum der Veröffentlichung	
1 US-A-4,393,865 = E1 (x) Besonders relevant (Seite/Spalte/Zeile/Fig.):		
2 EP-A-0 364 454 B1 = E2 (x) Besonders relevant (Seite/Spalte/Zeile/Fig.):		
3 EP 0 648 482 A2 = E3 (x) Besonders relevant (Seite/Spalte/Zeile/Fig.):		
4 WO 97/38658 = E4 (x) Besonders relevant (Seite/Spalte/Zeile/Fig.):		
5 US 3,587,580 = E5 (bereits im Prüfungsverfahren) Besonders relevant (Seite/Spalte/Zeile/Fig.):		
6 WO 94/26222 = E6 (bereits im Prüfungsverfahren) Besonders relevant (Seite/Spalte/Zeile/Fig.):		
7 US H1440 = E7 (bereits im Prüfungsverfahren) Besonders relevant (Seite/Spalte/Zeile/Fig.):		
Fortsetzung auf Zusatzblatt <input checked="" type="checkbox"/> X		
B. Sonstige Beweismittel		
Weitere Angaben auf Zusatzblatt <input type="checkbox"/>		

IX. Beweismittel

Beigeschlossen =



wird / werden nachgereicht =



nur für EPA

A. Veröffentlichungen:

Datum der
Veröffentlichung

1 8 WO 97/33547 = E8 (bereits im Prüfungsverfahren)

Besonders relevant (Seite/Spalte/Zeile/Fig.):

2

Besonders relevant (Seite/Spalte/Zeile/Fig.):

3

Besonders relevant (Seite/Spalte/Zeile/Fig.):

4

Besonders relevant (Seite/Spalte/Zeile/Fig.):

5

Besonders relevant (Seite/Spalte/Zeile/Fig.):

6

Besonders relevant (Seite/Spalte/Zeile/Fig.):

7

Besonders relevant (Seite/Spalte/Zeile/Fig.):

Fortsetzung auf Zusatzblatt

☐

B. Sonstige Beweismittel

Weitere Angaben auf Zusatzblatt

☐

X. Zahlung der Einspruchsgebühr erfolgt

☒ wie auf beigefügtem Gebührenzahlungsvordruck (EPA Form 1010) angegeben

☐
XI. Liste der Unterlagen:Anlage
Nr.:

Stückzahl

- | | | |
|----|--|---|
| 0 | <input checked="" type="checkbox"/> Einspruchsformblatt | <input type="text" value="2"/> (mind. 2) |
| 1 | <input checked="" type="checkbox"/> Tatsachen und Begründung (s. VII.) | <input type="text" value="2"/> (mind. 2) |
| 2 | Kopien von als Beweismittel angegebenen (s. IX.) | |
| 2a | <input type="text" value="4"/> — Veröffentlichungen | <input type="text" value="2"/> (mind. je 2) |
| 2b | <input type="checkbox"/> — sonstigen Unterlagen | <input type="text"/> (mind. je 2) |
| 3 | <input checked="" type="checkbox"/> Unterzeichnete Vollmacht(en) (s. IV.) AV | <input type="text" value="3"/> |
| 4 | <input checked="" type="checkbox"/> Gebührenzahlungsvordruck (s. X.) | <input type="text" value="1"/> |
| 5 | <input type="checkbox"/> Scheck | <input type="text"/> |
| 6 | <input checked="" type="checkbox"/> Zusatzblatt (Zusatzblätter) | <input type="text" value="2"/> (mind. je 2) |
| 7 | <input checked="" type="checkbox"/> Sonstige Unterlagen (bitte einzeln anführen):
Merkmalsanalyse Anspr. 1 | <input type="text" value="2"/> |

**XII. Unterschrift
des Einsprechenden oder Vertreters**

Ort Stuttgart

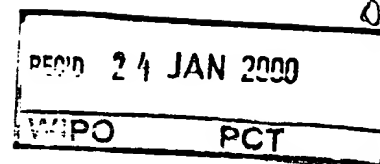
Datum 20. Oktober 2003


(O. Friz) Patentanwalt
Zusammenschluss Nr. 86

Name des (der) Unterzeichneten bitte mit Schreibmaschine wiederholen. Bei juristischen Personen bitte die Stellung des (der) Unterzeichneten innerhalb der Gesellschaft mit Schreibmaschine angeben

PATENT COOPERATION TREATY

PCT



INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 49751-53084		FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/SE98/01861	International filing date (day/month/year) 16/10/1998	Priority date (day/month/year) 24/10/1997	
International Patent Classification (IPC) or national classification and IPC A61F13/64			
Applicant SCA HYGIENE PRODUCTS AB et al.			



- This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 4 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

 These annexes consist of a total of 11 sheets.

- This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 21/05/1999	Date of completion of this report 20. 01. 00
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer De Crignis, G Telephone No. +49 89 2399 2332 

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/SE98/01861

I. Basis of the report

1. This report has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

Description, pages:

1-9 as received on 30/10/1999 with letter of 27/10/1999

Claims, No.:

18 1-89 as received on 30/10/1999 with letter of 27/10/1999

Drawings, sheets:

1/3-3/3 as originally filed

2. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/SE98/01861

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1 - 8
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1 - 8
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1 - 8
	No:	Claims	

2. Citations and explanations

see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/SE98/01861

Concerning Section V:

The present application satisfies the criterion set forth in Article 33 PCT because the subject-matter of Claims 1 to 8 is new and involves an inventive step in respect of prior art as defined in the regulations.

Document US-A-3,587,580 (D1), which is considered to represent the most relevant state of the art with respect to claim 1, discloses the preamble of claim 1.

The problem of the present application was to provide a garment with a waist belt which has a varying stiffness in the transverse direction along the whole longitudinal direction. This is neither known from nor suggested by the prior art.

A WAIST BELT FOR ABSORBENT GARMENTS

FIELD OF INVENTION

5 The present invention relates to a garment that comprises an
absorbent part and a waist belt which is attached directly or
indirectly to the garment, wherein the belt has two belt
portions that extend in respective opposite directions from
said absorbent part and which can be fastened together around
10 the wearer of said garment.

BACKGROUND OF THE INVENTION

15 Absorbent garments of the aforesaid kind are well known in
this field. The garment in question has a belt attached to
the absorbent part of the garment and, subsequent to
fastening the belt around the wearer's waist with the
attached end of the garment located at the rear of the
wearer, requires that end of the garment which is not
20 fastened to the belt to be brought between the wearer's
thighs and detachably fastened to the front side of the belt
with the aid of some type of fastener means. Such releasable
fastener means may have the form of hooks and loops (such as
touch-and-close fasteners), e.g. fasteners retailed under the
25 designation "VELCRO". An example of one such garment, is
described in WO-A1-94/26224.

It is also well known within this particular field to use
loose belts to which an absorbent unit is fastened, therewith
30 enabling one and the same belt to be used over a longer
period of time and together with a number of changes of
absorbent units. A loose belt of this kind is intended for
use with an absorbent unit illustrated and described in WO-
A1-94/26225.

35 TECHNICAL PROBLEMS

One well known problem with belted garments of the aforesaid

kind exists in the handling of those parts of the belt that protrude out from each side of the absorbent part of the combined garment, so as to enable the belt-portions to be gripped quickly and correctly and then fastened together. With respect in particular to incontinence problems, it will be understood that persons suffering from incontinence are often old and physically handicapped in some way or another. Consequently, there is need of a solution which will enable the absorbent garment to be correctly positioned on the wearer in a simple fashion.

A solution to this problem is taught by WO-A1-94/26222, according to which the belt is given a degree of stiffness such as to prevent excessive wrinkling of the belt and therewith facilitate handling of said belt.

Another aspect of the use of a stiff or rigid belt is described in UK Patent Specification GB-A-2,216,774, where a portion of the waist part, which can be interpreted as a belt-portion, comprises a stiffening element. It is said that this stiffening element functions to reduce wrinkling in this region, therewith reducing the risk of leakage.

US-A-3 587 580 discloses a garment comprising an absorbent part and a waist belt which has a longitudinal direction and a cross-direction and which is attached directly or indirectly to said garment, wherein said belt includes two belt portions which extend generally in said longitudinal direction in respective directions from said absorbent part and which are intended to be fastened together around a wearer of the garment, wherein the belt has a stiffness that varies in the cross-direction of the belt.

It is thus desirable from several aspects to use a belt which has a relatively high stiffness. Unfortunately, however, a very stiff belt is liable to cause discomfort to the wearer in use, for instance is liable to cut into and chafe the

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wearer's skin. In addition, a stiff belt has relatively little pliability and will not therefore adapt readily to the shape of the wearer's body. This problem is particularly significant in the case of broad belts, which are consequently often felt particularly uncomfortable to wear.

There is thus also a need of a solution which will allow the use of a relatively stiff, or rigid, belt, that is comfortable to wear and that will not increase the danger of the belt cutting into and chafing the wearer's skin.

10 SUMMARY OF THE INVENTION

The aforesaid problems are avoided essentially completely with the present invention. Thus, an object of the present invention is to provide a belt with which the risk of chafing the wearer's skin and causing other forms of skin irritation is markedly reduced. An inventive belt is primarily characterised in that it has a stiffness which varies in the cross-direction of the belt.

By configuring the belt with a stiffness which is greater in a longitudinally extending central part of the belt than in at least one longitudinally extending edge-part of said belt, there is provided a belt whose stiffness is sufficient to avoid the aforesaid handling and leakage problems while, at the same time, providing a soft belt edge which is comfortable to the user. Because the edge of the belt has a low degree of stiffness, it can be adapted to the shape of the wearer's body without impairing wearer comfort.

A belt comprising an essentially homogenous material is given the desired properties, for instance, by making the cross-sectional area smaller at the edge-parts of the belt than at the central part thereof. A belt of this design is particularly beneficial when the cross-sectional area decreases continuously from the longitudinally extending centre line of the belt towards the longitudinal edges of said belt.

AMENDED SHEET

Other preferred characteristic features of the invention and further embodiments thereof will be apparent from the following dependent claims.

5 BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will now be described in more detail with reference to the accompanying drawings, in which

10 Fig. 1 illustrates a garment which comprises a belt constructed in accordance with the invention;

Fig. 2 is a cross-sectional view of the belt shown in Fig. 1;

15 Fig. 3 illustrates another embodiment of an inventive belt;

Fig. 4 is a cross-sectional view of the belt shown in Fig. 3; and

20 Fig. 5 illustrates a third embodiment of an inventive belt.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

Fig. 1 shows a garment generally referenced 1. The garment
25 comprises an absorbent part 2 and a belt-portion, generally referenced 3. The belt may be a full belt 3 which is fastened to the absorbent part at its one end 4 (or 5). Alternatively, the belt 3 may comprise two mutually separate parts disposed on respective sides of the absorbent part 2 at one end 4 of
30 said absorbent part. The illustrated belt has a longitudinal direction L and a cross-direction T. The manner in which the belt is fastened is not significant to the present field of use. Thus, the belt 3 may be fastened permanently to the absorbent part 2, i.e. glued, welded, sewn thereto or
35 fastened thereto in some other way. Releasable fastener

AMENDED SHEET

devices may also be used, such as buttons, press-studs, clips, touch-and-close fasteners, or corresponding means.

If it is desired to incorporate suppleness and resilience in a belt that includes two mutually separate parts, it is conceivable for one end 4 (or 5) of the absorbent part of the garment to be made elastic.

The general appearance of the illustrated garment is known to the art and consequently not all of the component parts of said garment will be described in detail in this document. The belt 3 comprises a first belt-portion 7 that projects out from one first side-edge 41 of the absorbent part 2, and a second belt-portion 8 that projects out from the opposing side-edge 42 of said absorbent part. A fastener device 6 in the form of a surface that presents hooked elements and forming part of a touch-and-close fastener means is provided on one end portion of the first belt-portion 7. The fastener device 6 may either be fastened to the other belt-portion 8 (on the side thereof not shown in Fig. 1) or to a receiving area that includes loop-elements and arranged on the second belt-portion 8. The fastener device 6 may alternatively consist of an adhesive material which is either fastened to the second belt-portion 8 (on the side thereof not shown in Fig. 1) or to a specially designed receiving surface against which the adhesive fastener device 6 can be fastened and released repeatedly.

As is made apparent hereinafter, further advantages are afforded by special dimensions and designs of the belt 3. Although the belt is preferably generally oblong in shape, it may, of course, have other elongated shapes. However, when the belt has an oblong shape its width will preferably lie between 70 mm and 160 mm so as to enable the belt to be used by adults that are incontinent.

AMENDED SHEET

When using an inventive belt, the belt-portions 7 and 8 can be given good handling properties by choosing a belt material that is sufficiently stiff to avoid wrinkling problems while, nevertheless, avoiding problems associated with reduced
5 wearer comfort, such as chafing of and biting into the wearer's skin.

A nonwoven material is preferably used for either one side or both sides of the belt, said nonwoven material preferably
10 being of the kind to which hooked elements on the fastener device 6 can be releasably fastened. The use of nonwoven material as a receiving surface to which the fastener device 6 can be releasably fastened enables particularly beneficial combinations of peeling forces and shear strengths to be
15 obtained. The use of nonwoven material is also beneficial by virtue of the fact that it is less expensive than woven material and thus more appropriate for use with disposable garments.

20 Since wearer comfort is a particularly important factor to which attention must be paid within this field, and then particularly with regard to belt stiffness, it has been found advantageous to construct the belt in accordance with the present invention. As before mentioned, the belt will
25 beneficially have a certain degree of stiffness, particularly in its longitudinal direction L. At the same time, the risk of the belt edges cutting into the wearer's skin or chafing the wearer's skin is greater in the case of a stiff belt than in the case of a belt which is softer and more pliable. With
30 the intention of addressing this risk, the inventive belt is constructed so that its stiffness will vary in the cross-direction T of the belt, thereby enabling the belt to conform to the shape of the wearer's body in use much more readily than might otherwise be the case.

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AMENDED SHEET

Fig. 2 is a cross-sectional view of the belt 3 shown in Fig. 1. As will be apparent, the belt, which has a generally homogenous construction, comprises a central part 18 that is of predetermined stiffness. Because the belt has been constructed so that the cross-sectional area of said belt decreases in a direction towards the edge-parts 16 and 17 thereof, the stiffness of the belt will also decrease continuously in said edge-parts 16, 17. These parts 16 and 17 can thus conform to the wearer in use, for instance bulge out when necessary, therewith reducing the risk of chafing and of the belt cutting into the wearer's skin and also reducing the risk of impaired user comfort.

Fig. 3 illustrates another embodiment of the present invention in which the belt 3 comprises in its cross-direction T a plurality of mutually adjacent regions 9, 10, 11, 12, 13, 14 and 15 of mutually different stiffness, the extensions of these regions in the longitudinal direction L coinciding essentially with the length of the belt 3. These regions are preferably disposed so that the central part of the belt will be stiffer than the edge-parts of said belt. It is also conceivable for the belt to be constructed so that only one edge-part will have this greater pliability, preferably that edge-part which lies uppermost in use. Neither is it necessary for the regions 9, 10, 11, 12, 13, 14 and 15 to extend through the full thickness of the belt. For instance, these regions may be disposed on a layer 20 that is preferably placed proximal to the wearer's body in use.

Fig. 4 is a cross-sectional view of the belt 3 shown in Fig. 3 provided with a layer 20 which by virtue of its holding effect on said regions 9-15 facilitates manufacture of the belt, in addition to enhancing wearer comfort.

Fig. 5 illustrates a third embodiment of a continuous belt constructed in accordance with the present invention. The

AMENDED SHEET

belt 3 of the Fig. 5 embodiment includes a plurality of mutually adjacent regions 29, 30, 31, 32, 33, 34, 35 of mutually different stiffness in the cross-direction T of the belt, said regions being disposed on a first and a second belt-portion 7, 8. A part M of the belt 3 located centrally between the two stiffened belt-portions 7, 8 as seen in the longitudinal direction of the belt 3 includes no stiffening material and thus has one and the same degree of stiffness throughout the whole of its area. Thus, those portions 7, 8 of the belt that include regions of mutually different stiffness have an extension in the longitudinal direction L which is shorter than the length of the belt 3. In this case, said regions are placed so as to essentially coincide with the wearer's need for soft edge-parts on the belt 3.

In certain applications, it may be sufficient for the belt to have two longitudinally extending regions of mutually different stiffness. Furthermore, it may be appropriate to leave a piece of each end of the belt free from stiffening material, for instance when the belt is fastened together with the aid of a button/buttonhole fastener. This would facilitate buttoning of the belt. It is therefore not necessary for the belt to have regions of different stiffness along the whole of its length.

One method of achieving the desired difference in stiffness between different parts of the belt in its cross-direction is to treat the edge-parts of the belt in a manner to change the internal structure of the material. According to one embodiment of the invention (not shown), the edge-parts of the belt are softened by heat-treating said parts. According to another embodiment (also not shown) edge-parts of the belt are softened by exposing said edges to radiation, whereas said softening effect is achieved in accordance with another embodiment (not shown) by mechanically working said edge-parts.

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Naturally, combinations of the aforesaid methods can be used to produce the desired material properties within the scope of the invention.

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The invention shall not therefore be considered limited to the aforescribed exemplifying embodiments thereof, since other embodiments are conceivable within the scope of the following Claims.

AMENDED SHEET

CLAIMS

1. A garment (1) comprising an absorbent part (2) and a waist belt (3) which has a longitudinal direction (L) and a cross-direction (T) and which is attached directly or indirectly to said garment (1), wherein said belt (3) includes two belt-portions (7, 8) which extend generally in said longitudinal direction (L) in respective directions from said absorbent part (2) and which are intended to be fastened together around a wearer of the garment (1), which belt (3) has a stiffness that varies in the cross-direction (T) of the belt (3), characterised in that the stiffness that varies has an extension in the longitudinal direction (L) that essentially coincides with the length of the belt.

2. A garment according to claim 1, characterised in that the belt (3) comprises in its cross-direction (T) at least two mutually adjacent regions (9, 10, 11, 12, 13, 14, 15) of mutually different stiffness.

3. A garment according to claim 2, characterised in that the belt (3) has a longitudinally extending central part that is stiffer than at least one longitudinally extending edge-part of said belt.

4. A garment according to claim 1, characterised in that a part (M) of the belt (3) being located centrally between the two stiffened belt-portions (7, 8) have one and the same degree of stiffness throughout the whole of its area.

5. A garment according to any one of the preceding claims, characterised in that the two belt-portions (7, 8) of said belt (3) are comprised of a generally homogenous material; and in that a cross-section through one or both of said belt-portions (7, 8) presents at least one edge-part that is thinner than the central part of said cross-section.

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6. A garment according to any one of the preceding claims, characterised in that at least one edge-part of the belt (3) has been treated so as to change the stiffness of the material locally.

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7. A garment according to claim 6, characterised in that the edge-part of said belt (3) has been heat-treated.

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8. A garment according to claim 6, characterised in that the edge-part of said belt (3) has been treated with electromagnetic radiation.

9. A garment according to claim 6, characterised in that the edge-part of said belt (3) has been worked mechanically.

AMENDED SHEET

A WAIST BELT FOR ABSORBENT GARMENTS

FIELD OF INVENTION

5 The present invention relates to a garment that comprises an absorbent part and a waist belt which is attached directly or indirectly to the garment, wherein the belt has two belt portions that extend in respective opposite directions from said absorbent part and which can be fastened together around
10 the wearer of said garment.

BACKGROUND OF THE INVENTION

15 Absorbent garments of the aforesaid kind are well known in this field. The garment in question has a belt attached to the absorbent part of the garment and, subsequent to fastening the belt around the wearer's waist with the attached end of the garment located at the rear of the wearer, requires that end of the garment which is not
20 fastened to the belt to be brought between the wearer's thighs and detachably fastened to the front side of the belt with the aid of some type of fastener means. Such releasable fastener means may have the form of hooks and loops (such as touch-and-close fasteners), e.g. fasteners retailed under the
25 designation "VELCRO". An example of one such garment is described in WO-A1-94/26224.

It is also well known within this particular field to use loose belts to which an absorbent unit is fastened, therewith
30 enabling one and the same belt to be used over a longer period of time and together with a number of changes of absorbent units. A loose belt of this kind is intended for use with an absorbent unit illustrated and described in WO-A1-94/26225.

TECHNICAL PROBLEMS

One well known problem with belted garments of the aforesaid
5 kind exists in the handling of those parts of the belt that
protrude out from each side of the absorbent part of the
combined garment, so as to enable the belt-portions to be
gripped quickly and correctly and then fastened together.
With respect in particular to incontinence problems, it will
10 be understood that persons suffering from incontinence are
often old and physically handicapped in some way or another.
Consequently, there is need of a solution which will enable
the absorbent garment to be correctly positioned on the
wearer in a simple fashion.

15 A solution to this problem is taught by WO-A1-94/26222,
according to which the belt is given a degree of stiffness
such as to prevent excessive wrinkling of the belt and
therewith facilitate handling of said belt.

20 Another aspect of the use of a stiff or rigid belt is
described in UK Patent Specification GB-A-2,216,774, where a
portion of the waist part, which can be interpreted as a
belt-portion, comprises a stiffening element. It is said that
25 this stiffening element functions to reduce wrinkling in this
region, therewith reducing the risk of leakage.

It is thus desirable from several aspects to use a belt which
has a relatively high stiffness. Unfortunately, however, a
30 very stiff belt is liable to cause discomfort to the wearer
in use, for instance is liable to cut into and chafe the
wearer's skin. In addition, a stiff belt has relatively
little pliability and will not therefore adapt readily to the
shape of the wearer's body. This problem is particularly
35 significant in the case of broad belts, which are
consequently often felt particularly uncomfortable to wear.

There is thus also a need of a solution which will allow the use of a relatively stiff, or rigid, belt, that is comfortable to wear and that will not increase the danger of the belt cutting into and chafing the wearer's skin.

SUMMARY OF THE INVENTION

The aforesaid problems are avoided essentially completely with the present invention. Thus, an object of the present invention is to provide a belt with which the risk of chafing the wearer's skin and causing other forms of skin irritation is markedly reduced. An inventive belt is primarily characterised in that it has a stiffness which varies in the cross-direction of the belt.

By configuring the belt with a stiffness which is greater in a longitudinally extending central part of the belt than in at least one longitudinally extending edge-part of said belt, there is provided a belt whose stiffness is sufficient to avoid the aforesaid handling and leakage problems while, at the same time, providing a soft belt edge which is comfortable to the user. Because the edge of the belt has a low degree of stiffness, it can be adapted to the shape of the wearer's body without impairing wearer comfort.

A belt comprising an essentially homogenous material is given the desired properties, for instance, by making the cross-sectional area smaller at the edge-parts of the belt than at the central part thereof. A belt of this design is particularly beneficial when the cross-sectional area decreases continuously from the longitudinally extending centre line of the belt towards the longitudinal edges of said belt.

Other preferred characteristic features of the invention and further embodiments thereof will be apparent from the following dependent claims.

5 BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will now be described in more detail with reference to the accompanying drawings, in which

10 Fig. 1 illustrates a garment which comprises a belt constructed in accordance with the invention;

Fig. 2 is a cross-sectional view of the belt shown in Fig. 1;

15 Fig. 3 illustrates another embodiment of an inventive belt;

Fig. 4 is a cross-sectional view of the belt shown in Fig. 3; and

20 Fig. 5 illustrates a third embodiment of an inventive belt.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

Fig. 1 shows a garment generally referenced 1. The garment
25 comprises an absorbent part 2 and a belt-portion, generally referenced 3. The belt may be a full belt 3 which is fastened to the absorbent part at its one end 4 (or 5). Alternatively, the belt 3 may comprise two mutually separate parts disposed on respective sides of the absorbent part 2 at one end 4 of
30 said absorbent part. The illustrated belt has a longitudinal direction L and a cross-direction T. The manner in which the belt is fastened is not significant to the present field of use. Thus, the belt 3 may be fastened permanently to the absorbent part 2, i.e. glued, welded, sewn thereto or
35 fastened thereto in some other way. Releasable fastener

devices may also be used, such as buttons, press-studs, clips, touch-and-close fasteners, or corresponding means.

If it is desired to incorporate suppleness and resilience in a belt that includes two mutually separate parts, it is conceivable for one end 4 (or 5) of the absorbent part of the garment to be made elastic.

The general appearance of the illustrated garment is known to the art and consequently not all of the component parts of said garment will be described in detail in this document. The belt 3 comprises a first belt-portion 7 that projects out from one first side-edge 41 of the absorbent part 2, and a second belt-portion 8 that projects out from the opposing side-edge 42 of said absorbent part. A fastener device 6 in the form of a surface that presents hooked elements and forming part of a touch-and-close fastener means is provided on one end portion of the first belt-portion 7. The fastener device 6 may either be fastened to the other belt-portion 8 (on the side thereof not shown in Fig. 1) or to a receiving area that includes loop-elements and arranged on the second belt-portion 8. The fastener device 6 may alternatively consist of an adhesive material which is either fastened to the second belt-portion 8 (on the side thereof not shown in Fig. 1) or to a specially designed receiving surface against which the adhesive fastener device 6 can be fastened and released repeatedly.

As is made apparent hereinafter, further advantages are afforded by special dimensions and designs of the belt 3. Although the belt is preferably generally oblong in shape, it may, of course, have other elongated shapes. However, when the belt has an oblong shape its width will preferably lie between 70 mm and 160 mm so as to enable the belt to be used by adults that are incontinent.

When using an inventive belt, the belt-portions 7 and 8 can be given good handling properties by choosing a belt material that is sufficiently stiff to avoid wrinkling problems while, nevertheless, avoiding problems associated with reduced wearer comfort, such as chafing of and biting into the wearer's skin.

A nonwoven material is preferably used for either one side or both sides of the belt, said nonwoven material preferably being of the kind to which hooked elements on the fastener device 6 can be releasably fastened. The use of nonwoven material as a receiving surface to which the fastener device 6 can be releasably fastened enables particularly beneficial combinations of peeling forces and shear strengths to be obtained. The use of nonwoven material is also beneficial by virtue of the fact that it is less expensive than woven material and thus more appropriate for use with disposable garments.

Since wearer comfort is a particularly important factor to which attention must be paid within this field, and then particularly with regard to belt stiffness, it has been found advantageous to construct the belt in accordance with the present invention. As before mentioned, the belt will beneficially have a certain degree of stiffness, particularly in its longitudinal direction L. At the same time, the risk of the belt edges cutting into the wearer's skin or chafing the wearer's skin is greater in the case of a stiff belt than in the case of a belt which is softer and more pliable. With the intention of addressing this risk, the inventive belt is constructed so that its stiffness will vary in the cross-direction T of the belt, thereby enabling the belt to conform to the shape of the wearer's body in use much more readily than might otherwise be the case.

Fig. 2 is a cross-sectional view of the belt 3 shown in Fig. 1. As will be apparent, the belt, which has a generally homogenous construction, comprises a central part 18 that is of predetermined stiffness. Because the belt has been constructed so that the cross-sectional area of said belt decreases in a direction towards the edge-parts 16 and 17 thereof, the stiffness of the belt will also decrease continuously in said edge-parts 16, 17. These parts 16 and 17 can thus conform to the wearer in use, for instance bulge out when necessary, therewith reducing the risk of chafing and of the belt cutting into the wearer's skin and also reducing the risk of impaired user comfort.

Fig. 3 illustrates another embodiment of the present invention in which the belt 3 comprises in its cross-direction T a plurality of mutually adjacent regions 9, 10, 11, 12, 13, 14 and 15 of mutually different stiffness, the extensions of these regions in the longitudinal direction L coinciding essentially with the length of the belt 3. These regions are preferably disposed so that the central part of the belt will be stiffer than the edge-parts of said belt. It is also conceivable for the belt to be constructed so that only one edge-part will have this greater pliability, preferably that edge-part which lies uppermost in use. Neither is it necessary for the regions 9, 10, 11, 12, 13, 14 and 15 to extend through the full thickness of the belt. For instance, these regions may be disposed on a layer 20 that is preferably placed proximal to the wearer's body in use.

Fig. 4 is a cross-sectional view of the belt 3 shown in Fig. 3 provided with a layer 20 which by virtue of its holding effect on said regions 9-15 facilitates manufacture of the belt, in addition to enhancing wearer comfort.

Fig. 5 illustrates a third embodiment of a continuous belt constructed in accordance with the present invention. The

belt 3 of the Fig. 5 embodiment includes a plurality of mutually adjacent regions 29, 30, 31, 32, 33, 34, 35 of mutually different stiffness in the cross-direction T of the belt, said regions being disposed on a first and a second belt-portion 7, 8. A part M of the belt 3 located centrally between the two stiffened belt-portions 7, 8 as seen in the longitudinal direction of the belt 3 includes no stiffening material and thus has one and the same degree of stiffness throughout the whole of its area. Thus, those portions 7, 8 of the belt that include regions of mutually different stiffness have an extension in the longitudinal direction L which is shorter than the length of the belt 3. In this case, said regions are placed so as to essentially coincide with the wearer's need for soft edge-parts on the belt 3.

In certain applications, it may be sufficient for the belt to have two longitudinally extending regions of mutually different stiffness. Furthermore, it may be appropriate to leave a piece of each end of the belt free from stiffening material, for instance when the belt is fastened together with the aid of a button/buttonhole fastener. This would facilitate buttoning of the belt. It is therefore not necessary for the belt to have regions of different stiffness along the whole of its length.

One method of achieving the desired difference in stiffness between different parts of the belt in its cross-direction is to treat the edge-parts of the belt in a manner to change the internal structure of the material. According to one embodiment of the invention (not shown), the edge-parts of the belt are softened by heat-treating said parts. According to another embodiment (also not shown) edge-parts of the belt are softened by exposing said edges to radiation, whereas said softening effect is achieved in accordance with another embodiment (not shown) by mechanically working said edge-parts.

Naturally, combinations of the aforesaid methods can be used to produce the desired material properties within the scope of the invention.

5

The invention shall not therefore be considered limited to the aforescribed exemplifying embodiments thereof, since other embodiments are conceivable within the scope of the following Claims.

CLAIMS

1. A garment (1) comprising an absorbent part (2) and a waist belt (3) which has a longitudinal direction (L) and a cross-direction (T) and which is attached directly or indirectly to said garment (1), wherein said belt (3) includes two belt-portions (7, 8) which extend generally in said longitudinal direction (L) in respective directions from said absorbent part (2) and which are intended to be fastened together around a wearer of the garment (1), characterised in that the belt (3) has a stiffness that varies in the cross-direction (T) of the belt (3).

2. A garment according to Claim 1, characterised in that the belt (3) comprises in its cross-direction (T) at least two mutually adjacent regions (9, 10, 11, 12, 13, 14, 15) of mutually different stiffness.

3. A garment according to Claim 2, characterised in that the belt (3) has a longitudinally extending central part that is stiffer than at least one longitudinally extending edge-part of said belt (3).

4. A garment according to Claim 2 or 3, characterised in that the mutually opposing regions (9-15) disposed in the cross-direction of the belt have an extension in the longitudinal direction (L) that essentially coincides with the length of the belt (3).

5. A garment according to Claim 3, characterised in that the regions (29-35) of mutually different stiffness that lie adjacent one another in the cross-direction (T) of the belt have extensions in the longitudinal direction (L) that are shorter than the length of the belt (3).

6. A garment according to any one of the preceding Claims, characterised in that the two belt-portions (7, 8) of said belt (3) are comprised of a generally homogenous material; and in that a cross-section through one or both of said belt-
5 portions (7, 8) presents at least one edge-part that is thinner than the central part of said cross-section.

7. A garment according to any one of the preceding Claims, characterised in that at least one edge-part of the belt (3)
10 has been treated so as to change the stiffness of the material locally.

8. A garment according to Claim 7, characterised in that the edge-part of said belt (3) has been heat-treated.

15 9. A garment according to Claim 7, characterised in that the edge-part of said belt (3) has been treated with electromagnetic radiation.

20 10. A garment according to Claim 7, characterised in that the edge-part of said belt (3) has been worked mechanically.

PCT

INTERNATIONAL-TYPE SEARCH REPORT

(PCT Article 15.5)

National application No. 9703882-2	Country or Office of filing SE	Applicant's or agent's file reference
Filing date (day/month/year) 24 October 1997	(Earliest) Priority Date (day/month/year)	
Applicant SCA Mölnlycke AB		

Date of request for international-type search 24 October 1997	International-type search request No. SE 97/01310
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This international-type search report has been prepared by this International Searching Authority and is transmitted to the applicant.

This international-type search report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. ☐ Certain claims were found unsearchable (See Box I).
2. ☐ Unity of invention is lacking (See Box II).
3. ☐ The international application contains disclosure of a nucleotide and/or amino acid sequence listing and the international-type search was carried out on the basis of the sequence listing
 - ☐ filed with the international application.
 - ☐ furnished by the applicant separately from the international application,
 - ☐ but not accompanied by a statement to the effect that it did not include matter going beyond the disclosure in the international application as filed.
 - ☐ transcribed by this Authority.

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: A61F 13/64

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: A61F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI EPODOC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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X	US 3587580 A (JOHN LESLIE JONES, SR.), 28 June 1971 (28.06.71), figure 1	1,2
A	figures 1,2 --	3,5
A	EP 0528282 A2 (KIMBERLY-CLARK CORPORATION), 24 February 1993 (24.02.93) --	1
A	US 1440 H (NEW ET AL.), 2 May 1995 (02.05.95), abstract --	1
A	WO 9426222 A1 (MÖLNLYCKE AB), 24 November 1994 (24.11.94) --	1

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international-type search

22 April 1998

Date of mailing of the international-type search report

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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INTERNATIONAL-TYPE SEARCH REPORT
Information on patent family members

02/04/98

Search request No.

SE 97/01310

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